South-Central California Steelhead Recovery Plan Summary

Adult anadromous Steelhead, San Carpoforo Creek, San Luis Obispo County

National Marine Fisheries Service
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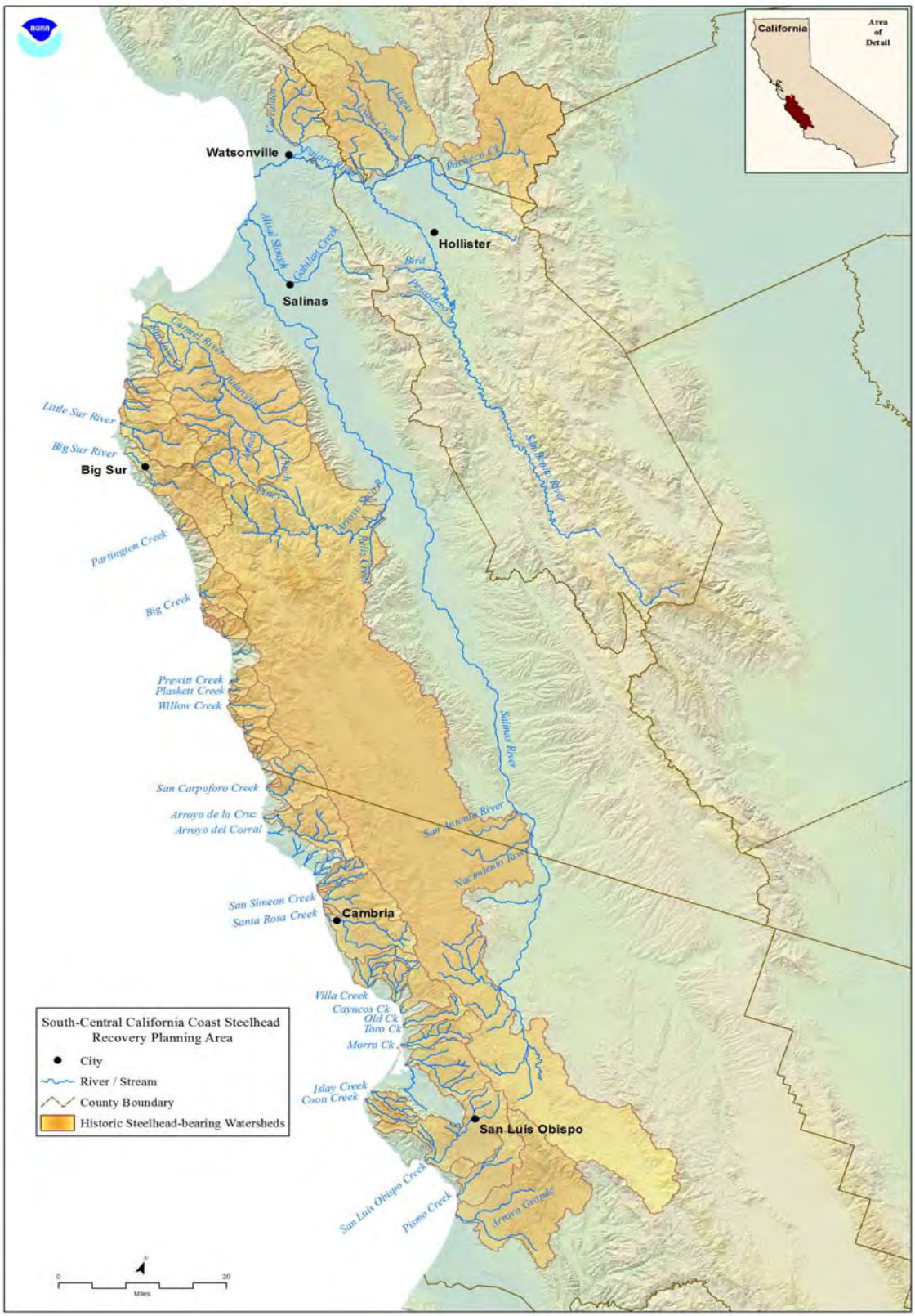
Long Beach, CA

Introduction

Steelhead is the anadromous, or ocean-going, form of the species *Oncorhynchus mykiss*. One of six Pacific salmon species in the genus *Oncorhynchus* that are native to the west coast of North America, *O. mykiss* is currently the only species that naturally reproduces within the coastal watersheds of south-central California with any regularity. Because steelhead employ several different life-history strategies that utilize all portions of a river system, they effectively serve as an indicator species, providing a measure of the health of south-central California coastal watersheds. Largely due to human activities and extensive watershed development, south-central California steelhead populations have declined precipitously.

Following a comprehensive status review of all West Coast steelhead populations by the National Marine Fisheries Service (NMFS), south-central California steelhead were formally listed as an endangered under the Endangered Species Act (ESA) on August 18, 1997. Following a status review in 2005, a final listing determination was issued on January 5, 2006 for the South-Central California Steelhead Distinct Population Segment (DPS) and critical habitat was designated within 40 DPS watersheds.

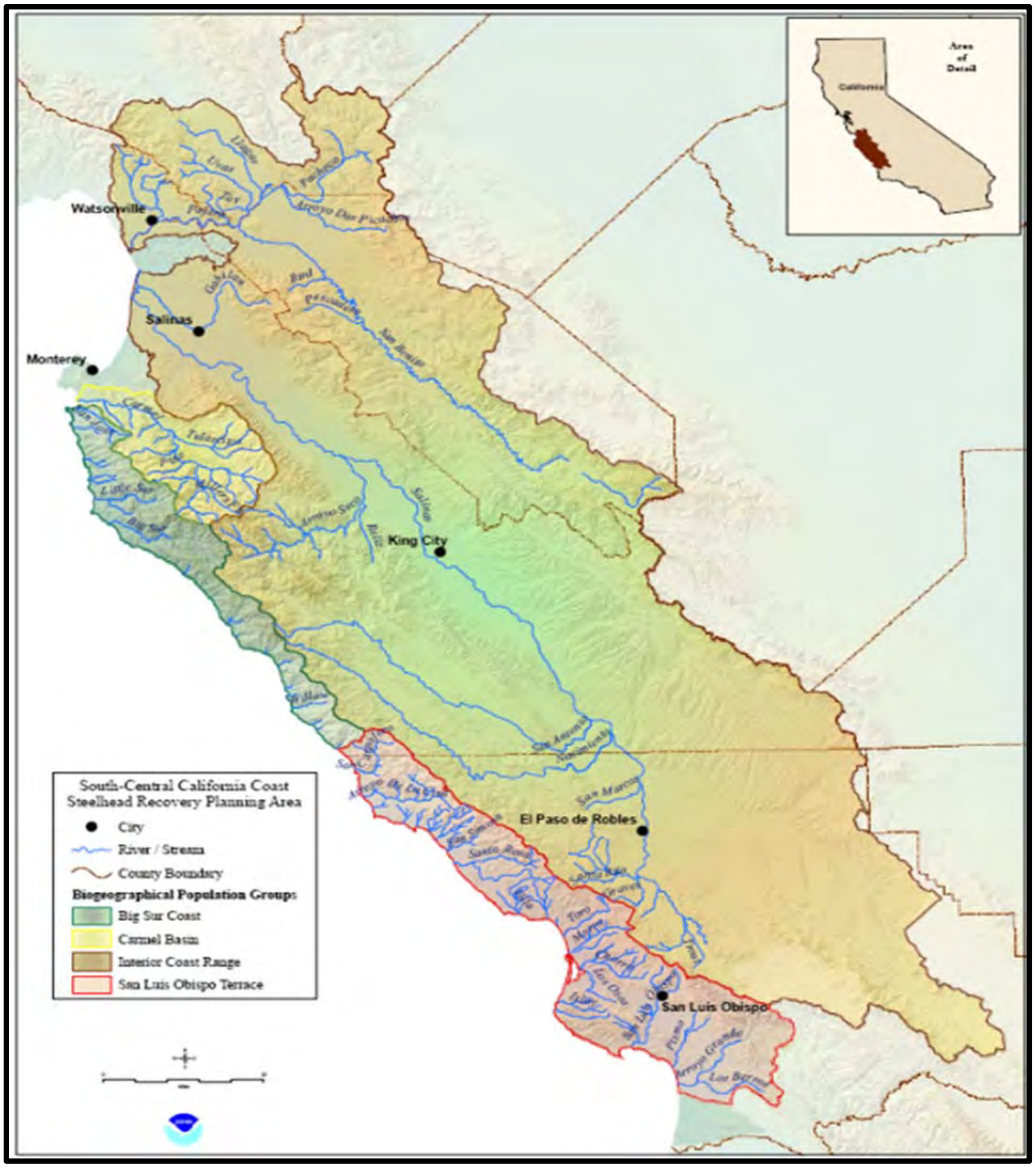
The South-Central California Coast Steelhead (SCCCS) Recovery Planning Area extends from the Pajaro River in Santa Cruz/Monterey County south to, but not including, the Santa Maria River at the San Luis Obispo/Santa Barbara County line. It includes both those portions of coastal watersheds that are at least seasonally accessible to steelhead entering from the ocean and the upstream portions of some watersheds that are currently inaccessible to steelhead due to man-made barriers. Major watersheds in the northern portion of the Recovery Planning Area include the Pajaro, and Carmel Rivers. Major watersheds in the central portion of the Recovery Planning Area include the Little and Big Sur Rivers, San Carpoforo and Arroyo de la Cruz Creeks; Major watersheds in the southern portion of the Recovery Planning Areas include the Morro Bay Complex, San Luis Obispo Creek and Arroyo Grande Creeks. The inland Salinas River traverses almost the entire length of the DPS.



The South-Central California Steelhead Coast Recovery Planning Area.

The South-Central California Steelhead DPS encompasses all naturally-spawned anadromous *O. mykiss* between the Pajaro River (inclusive) and the Santa Maria River (exclusive) whose freshwater habitat occurs below artificial or natural impassable upstream barriers, as well as *O. mykiss* residing above impassable barriers that are able to emigrate into waters below barriers and exhibit an anadromous life-history.

The SCCCS Recovery Planning Area is divided into four Biogeographic Population Groups (BPGs): Interior Coast Range, Carmel River Basin, Big Sur Coast, and San Luis Obispo Terrace. Each BPG is characterized by a unique combination of physical and ecological characteristics that represent differing natural selective regimes for steelhead populations utilizing watersheds within BPGs. The separate watersheds comprising each BPG are generally considered to support discrete *O. mykiss* populations (*i.e.*, one watershed = one steelhead population). Thus, a single BPG can encompass multiple watersheds and multiple *O. mykiss* populations. The sole exception is the Salinas River which includes three populations.



The South-Central California Steelhead Recovery Planning Area Biogeographic Population Groups.

The basic goal of the South-Central California Steelhead Recovery Plan is to recover anadromous steelhead and ensure the long-term persistence of self-sustaining wild populations of steelhead across the DPS – and ultimately to remove south-central California steelhead from the Federal List of Endangered and Threatened Wildlife. The Recovery Plan proposes to accomplish this goal by addressing factors limiting the species ability to survive and naturally reproduce in the wild within a set of core watershed populations distributed across the South-Central California Steelhead Recovery Planning Area.

Steelhead Biology and Ecology

Steelhead, along with other species of Pacific salmon, exhibit an anadromous life history: juveniles born and reared in fresh water undergo a change that allows them to migrate to and mature in salt water before returning to their natal rivers or streams (*i.e.*, streams where they were spawned) to reproduce and complete their life cycle. After maturing in the marine environment for two to four years, returning adults may migrate many miles upstream to reach their spawning grounds. Once in spawning habitat, a female will excavate a nest, known as a *redd*, in streambed gravels where she deposits her eggs. After fertilization, hatching time varies from about three weeks to two months with the young fish emerging two to six weeks later. Adult anadromous steelhead do not necessarily die after spawning and may return to the ocean, sometimes repeating their spawning migration one or more times.

Juvenile *O. mykiss* (~10cm)
Trout Creek (Salinas River)

Pre-Smolt *O. mykiss* (~20 cm)
Carmel River Lagoon

Adult *O. mykiss* (~68 cm)
San Carpoforo Creek

Within this basic life history pattern, individuals may exhibit great variation in the time and location spent at each life-history stage. *O. mykiss* exhibit three basic life-history strategies: fluvial-anadromous (migration from river to sea), lagoon-anadromous (migration to and from a lagoon) and freshwater residency (remain in freshwater). The diversity of these strategies has allowed *O. mykiss* to take advantage of different habitats and to persist in the highly variable and challenging south-central California environment. Anadromous steelhead reach a larger size and produce more eggs per individual than typical freshwater resident *O. mykiss*; they can also spawn in non-natal streams and thus re-colonize watersheds whose populations have been extirpated. Lagoon-reared juveniles can attain a larger size in a single rearing season than a freshwater reared individual, which enhances their survival in the ocean. However, freshwater individuals, referred to as rainbow trout, may exhibit higher survival rates than ocean-reared individuals during poor ocean conditions, that can persist for multiple decades. Fish that exhibit any one of these life-history strategies can produce progeny that exhibit one or more of the other life-history strategies. The switching of life-history strategies is an important adaptive response to the highly variable environments characteristic of south-central California watersheds.

Factors Leading to Federal Listing

For millennia, steelhead have been an integral part of south-central California watershed ecosystems. Recreational steelhead angling was prevalent in the early to mid-1900s, and both ocean and river-bound steelhead and their progeny were sought out by recreational anglers during the winter, spring and summer fishing seasons.

Steelhead Angler, Big Sur River, c. 1940

Following the rise in south-central California's human population after WW II and the associated land and water development in coastal watersheds, steelhead populations rapidly declined. South-central California anadromous *O. mykiss* populations face significant threats from water management activities related to agricultural and urban development, that have degraded or curtailed freshwater and estuarine habitats, reducing the ability of the species to persist through a range of environmental conditions within many watersheds.

Water storage, withdrawal, conveyance, and diversions for agriculture, flood control, and domestic water supply purposes have greatly reduced or eliminated historically accessible habitat, particularly in the larger watersheds. Modification of natural flow regimes by dams and other water control structures have degraded steelhead habitats through: increased water temperatures; changes in riparian and fish community structure; depleted flows necessary for migration, spawning, rearing and flushing of sediments from spawning gravels; and reduced gravel recruitment to support spawning and invertebrate food sources for rearing juveniles.

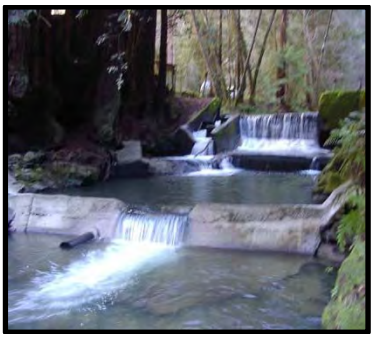
San Clemente Dam, Carmel River

San Luis Obispo Creek Estuary

Land-use activities associated with urban development, mining, agriculture, ranching, and recreation have significantly altered steelhead habitat quantity and quality. Associated impacts of these activities include alteration of stream bank and channel morphology; alteration of ambient stream water temperatures; degradation of water quality; elimination of spawning and rearing habitats; fragmentation of available habitats; elimination of downstream recruitment of spawning gravels and large woody debris; removal of riparian vegetation resulting in increased stream bank erosion; loss of channel complexity, pool habitat, and suitable gravel substrate; and increased sedimentation input into spawning and rearing areas. In addition, a significant percentage of estuarine habitats have been lost in the northern and southern portions of the DPS. The habitat condition of many of these remaining wetland habitats is poor, with many wetland areas at continued risk of further reduction and degradation.

Artificial Sandbar Breaching

Urban Encroachment on Estuaries



Surface Water Diversions

Other factors contributing to the decline of south-central California steelhead populations and leading to the listing of the species as threatened include impacts from recreational activities such as unauthorized angling; the introduction and spread of non-native species which can compete directly or indirectly for habitat space, or serve as vectors for disease or increase predation; the inadequacy of existing planning or regulatory mechanism at the local, state, and federal levels; and projected impacts of future climate change.

Steelhead Recovery Goals, Objectives, and Criteria

The Recovery Plan is a guideline document for achieving recovery goals that include specific biological objectives and viability criteria for populations of *O. mykiss* and the DPS as a whole. The overall goal of the South-Central California Steelhead Recovery Plan is to prevent the extinction of anadromous steelhead by ensuring the long-term persistence of viable, self-sustaining, wild populations of steelhead across the DPS.

The Recovery Plan outlines the following objectives that address factors limiting the species' ability to survive and naturally reproduce in the wild:

- ***Prevent steelhead extinction by protecting existing populations and their habitats***.
- ***Maintain current distribution of steelhead and restore distribution to some previously occupied areas.***
- ***Increase abundance of steelhead to viable population levels, including the expression of all life-history forms and strategies.***
- ***Conserve existing genetic diversity and provide opportunities for interchange of genetic material between and within viable populations within the DPS.***
- ***Restore and maintain suitable habitat conditions and characteristics for all life-history strategies, thereby preserving the diversity of life-history strategies that allow for adaptation to a highly variable environment.***
- ***Conduct necessary research to refine recovery criteria, monitor the status and trends of individual populations, and adaptively modify recovery actions and strategies in response to new information and better understanding of the biology and habitat requirements of the species.***

Biological viability criteria are identified for individual populations and the DPS as a whole. A *viable population* is defined as a population having a negligible risk (<5%) of extinction due to threats from demographic variation, non-catastrophic environmental variation, and genetic diversity changes over a 100-year time frame. A *viable DPS* is comprised of a sufficient number of viable populations broadly distributed throughout the DPS but sufficiently well-connected through ocean and freshwater dispersal to maintain long-term (1,000-year) persistence and evolutionary potential of the DPS.

The population level viability criteria apply to core populations in all of the BPGs. These criteria include population characteristics such as mean annual run-size, persistence during varying ocean conditions, spawner density, and the anadromous fraction of the individual populations. Because of the uncertainty regarding important aspects of the biology and ecology of south-central California steelhead (*e.g.*, degree of dispersal between watersheds, contributions of resident freshwater forms to anadromous forms, and vice-versa, etc.), further research is needed to refine the population specific criteria in all BPGs, as well as the role of each of the BPG.

The DPS viability criteria includes a minimum number of populations which must be restored to viability and the minimum spatial distribution between populations in each BPG: Interior Coast Range – 4 populations; Carmel River Basin – 1 population; Big Sur Coast – 3 populations; San Luis Obispo Terrace – 5 populations. This redundancy ensure that there are a sufficient number of population within BPGs and across the DPS to provide for resilience against natural environmental fluctuations (*e.g.*, wildfires), and also that a variety of habitat types and conditions are represented (*e.g.*, different stream gradients and estuary size, complexity and function) to promote the continued evolution of the species.

Uncertainties remain regarding the level of recovery necessary to achieve population and DPS viability, therefore, additional research and monitoring of O. mykiss populations within the SCCCS Recovery Planning Area is an essential component of this Recovery Plan. As the Recovery Plan is implemented, additional information will become available to: (1) refine the viability criteria; (2) update and refine the threats assessment and related recovery actions; (3) determine whether individual threats have been abated or new threats have arisen; and (4) evaluate the overall viability of anadromous O. mykiss in the SCCCS Recovery Planning Area.

Summary of DPS-Wide Recovery Actions

Recovery of the South-Central California Coast Steelhead DPS will require recovery of a sufficient number of viable populations (or sets of interacting trans-watershed populations) within each of the four BPGs to conserve the natural diversity (genetic, phenotypic, and behavioral), spatial distribution, and resiliency of the DPS as a whole. All BPGs must be restored to viability before the DPS as a whole can be recovered. A wide range of threats, including water management land-use practices, residential, and agricultural practices pose a variety of threats to the steelhead populations of the south-Central California.

The Recovery Plan outlines the following objectives that address common threats across the DPS:

- ***Physically modify passage barriers such as dams and diversion facilities to allow natural rates of migration to upstream spawning and rearing habitats.***

- ***Coordinate with the California Department of Fish and Game and State Water Resources Control Board to ensure the effective implementation of California Fish and Game Code Sections 5935-5937 (provision of fishway and fish flows associated with dams and diversions).***

- ***Extend California Water Code Section 1294.4 (dealing with instream flows to protect instream beneficial uses, including native fishes), to south-central California.***

- ***Enhance protection of natural in-channel riparian habitats, including appropriate management of flood-control activities, off-road vehicle use, and in-river sand and gravel mining practices.***

- ***Eliminate stocking of non-native and non-native hatchery-reared fish in anadromous waters, and control the introduction of non-native and non-native hatchery-reared fish which may enter anadromous waters.***

- ***Reduce water pollutants such as fine sediments, pesticides, herbicides, and other non-point source waste discharges.***

- ***Assess the condition of and restore estuarine habitats through the control of fill, waste discharges, and establishment of buffers; control artificial breaching and/or draining of coastal estuaries.***

- ***Conduct research on the relationship between resident and anadromous forms of O. mykiss, and the population dynamics regarding distribution, abundance, residualization, dispersal, and recolonization rates.***

- ***Survey and monitor the distribution and abundance of non-native species plants and animals that degrade natural habitats or compete with native species; reduce and/or control such non-native invasive species.***

- ***Incorporate appropriate elements of the Recovery Plan into the state-sponsored and funded Integrated Regional Water Management Plans (IRWMP).***

- ***Finalize and implement the Statewide Coastal Monitoring Plan for anadromous salmonids.***

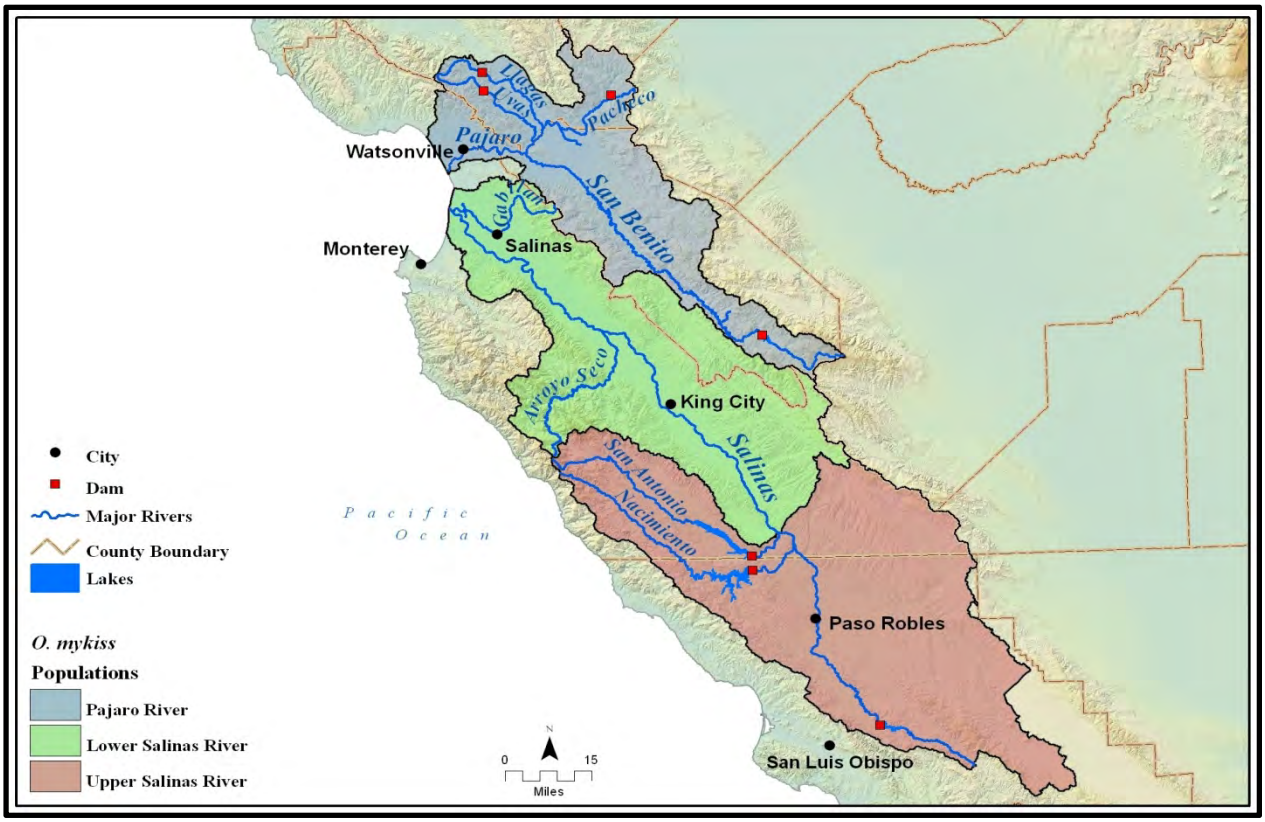
- ***Complete the Fishery Management and Evaluation Plan (FMEP) for anadromous waters, and evaluate the impact of angling for native O. mykiss above upstream migration barriers.***

Based upon the costs of individual recovery actions identified, NMFS estimates that the cost of implementing recovery actions throughout the SCCCS Recovery Planning Area will be approximately 560 million dollars borne over the next 80 to 100 years, though many smaller scale recovery actions are projected to be completed in a much shorter time-frame.

Many of the recovery actions identified in this Recovery Plan address watershed-wide processes which are also the focus of other local, state and federal programs (*e.g.*, wild-fire cycle, erosion and sedimentation, runoff and waste discharges) which will benefit a wide variety of native species (including other state and federally listed species, or species of special concern) by restoring natural ecosystem functions. Restoration of steelhead habitats in coastal watersheds will also provide substantial benefits for human communities. These include, but are not limited to, improving and protecting the water quality of important surface and groundwater supplies, reducing damage from periodic flooding resulting from floodplain development, and controlling invasive exotic animal and plant species which can threaten water supplies and increase flooding risks. Restoring and maintaining ecologically functional watersheds also enhances important human uses of aquatic habitats occupied by steelhead; these include activities such as outdoor recreation, environmental education (at primary and secondary levels), field-based research of both physical and biological processes of coastal watersheds, aesthetic benefits, and the preservation of tribal and cultural heritage values.

Recovery of South-Central California steelhead is dependent on the cooperation of a variety of local, state, and federal partners, including private landowners, and non-governmental organizations working at the community and regional level. The implementation of recovery actions by these parties will require in some cases streamlining environmental review and regulatory processes to reduce costs and create incentives to landowners, non-governmental organizations, and managers undertaking recovery actions. This Recovery Plan builds on the restoration efforts which have already been made by a wide variety of local, state, and federal agencies, as well as important work undertaken by private landowners and non-governmental agencies.

Interior Coast Range
Biogeographic Population Group



The Interior Coast Range BPG region is the largest of the four BPG regions in SCCCS Recovery Planning Area and includes the east-facing (interior) slopes of the Central Coast Range (Santa Lucia and Santa Cruz Mountains) and the west-facing slopes of the Inner Coast Range (Diablo, Gabilan, Caliente, and Temblor Mountains). This region extends 180 miles along the entire (north-to-south) length of the SCCCS Recovery Planning Area and includes portions of Santa Cruz, Santa Clara, San Benito, Monterey, and San Luis Obispo counties. The Salinas and Pajaro Rivers are the two large watersheds within the DPS. Although there is a very large overall total stream length in this region (7,773 miles), the majority of drainages exhibit seasonal surface flow or have extensive seasonal reaches because of the highly variable patterns of precipitation.

Salinas River

San Antonio Dam

Nacimiento Dam

Threat Source Rankings: Interior Coast Range BPG Component Watersheds (north to south)*							
THREAT SOURCES	Uvas Creek	Pajaro River Mainstem	Salinas River Mainstem	Gabilan Creek	Arroyo Seco	San Antonio River	Nacimiento River
Dams and Surface Water Diversions							
Groundwater Extraction							
Agricultural Development							
Recreational Facilities							
Levees and Channelization							
Non-Native Species							
Urban Development							
Flood Control							
Agricultural Effluent							
Roads							
Other Passage Barriers							

Key: Threat cell colors represent threat rating from CAP Workbook: Red = Very High threat; Yellow = High threat; Light green = Medium threat; Dark green = Low threat

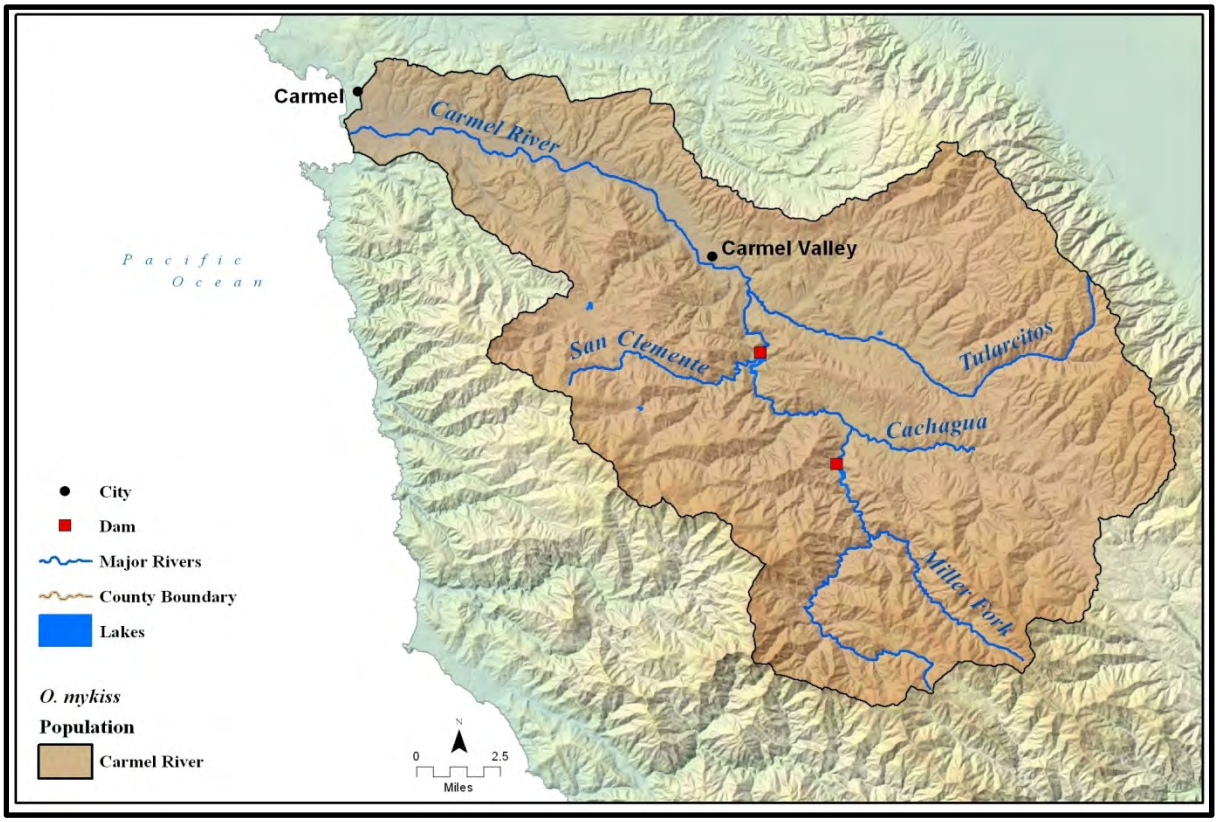
**Wildfires were not identified during the CAP Workbook analyses as one of the top five threats in these watersheds, but wildfires within the headwaters of Gabilan Creek (Fremont Peak) in the northern Gabilan Range, as well as wildfires in the tributaries of the Salinas River could be a significant threat to these populations.*

Critical Recovery Actions

- Implement operating criteria to ensure the pattern and magnitude of groundwater extractions and water releases from Uvas, Pacheco, Salinas, San Antonio, and Nacimiento Dams to provide the essential habitat functions to support the life history and habitat requirements of adult and juvenile steelhead.

- Physically modify passage impediments (*e.g.*, Uvas Dam) to allow steelhead migration to upstream spawning and rearing habitats and passage of smolts and kelts downstream to the estuary and ocean, and restoration of spawning gravel recruitment to the lower mainstem (*e.g.*, Uvas Creek).

Carmel River Basin
Biogeographic Population Group



The Carmel River Basin Biogeographic Population Group BPG region is one of the smallest of the four BPG regions in the SCCCS Recovery Planning Area; the main axis of the Carmel River watershed is just 28 miles long. The Carmel River Basin BPG region drains the eastern slopes of the northern Santa Lucia Range and the western slopes of the Sierra de Salinas in northwestern Monterey County. There are seven major perennial tributaries to the Carmel River. Average annual precipitation in this region is relatively low and shows high spatial variability. In general, the coastal regions and higher elevations receive higher amounts of precipitation. The Carmel River watershed is relatively steep and most of the tributaries are naturally perennial.

Upper Carmel River

Lower Carmel River

Carmel River Estuary

Threat Source Rankings: Carmel River Basin BPG	
THREAT SOURCES	**WATERSHED**
	Carmel River
Dams and Surface Water Diversions	
Groundwater Extraction	
Urban Development	
Levees and Channelization	
Culverts and Road Crossings (Other Passage Barriers)	
Recreational Facilities	

Key: Threat cell colors represent threat rating from CAP Workbook: Red = Very High threat; Yellow = high threat; Light green = Medium threat; Dark green = Low threat

**Note Agricultural development was not identified during the CAP Workbook analyses as one of the top five threats in this watershed, but agricultural development in the middle reaches of the Carmel River, and with some tributaries could be a significant threat to these population.*

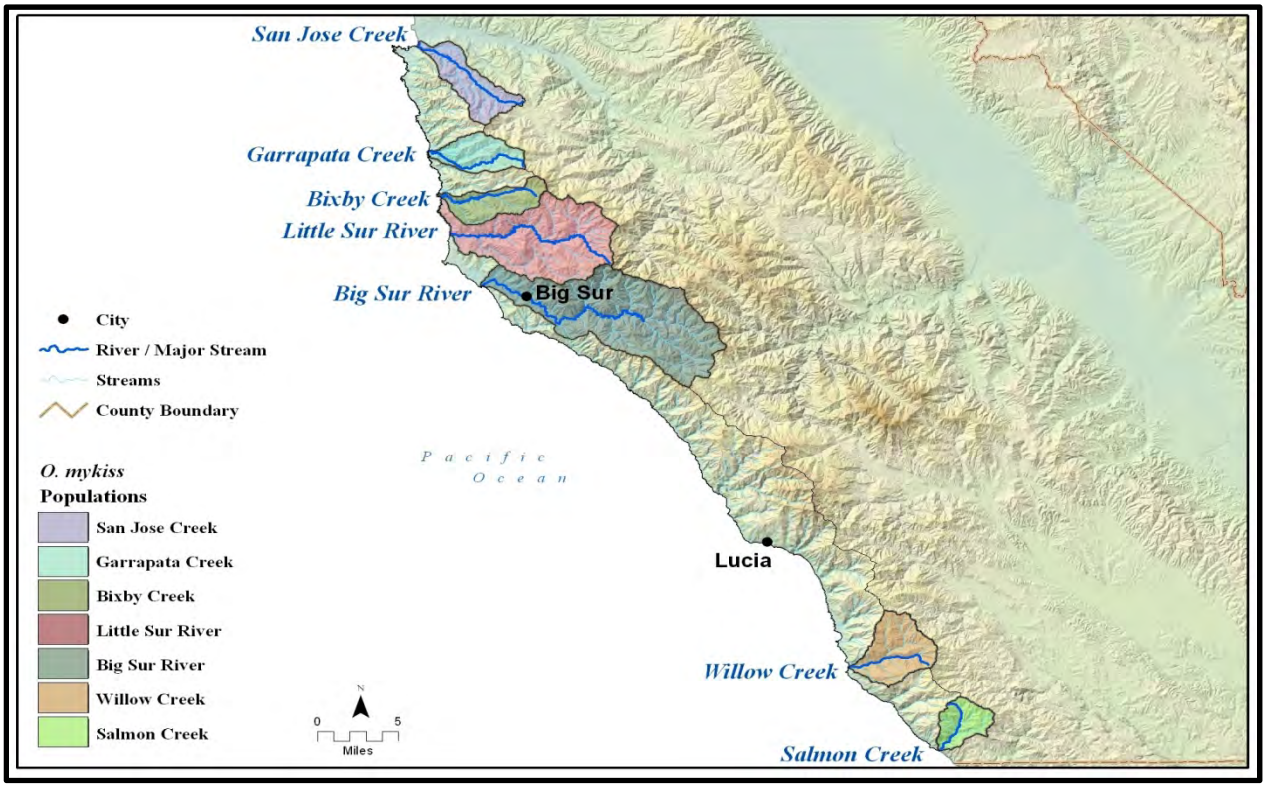
Critical Recovery Actions

- Implement removal of San Clemente Dam, and investigate the removal of Los Padres Dam to provide up and downstream migration of both adult and juvenile steelhead, restore natural recruitment of sediment and large woody debris, and restore riparian habitat structure and complexity.

- In the interim ensure provisional fish passage of both adult and juvenile O. *mykiss* around Los Padres, San Clemente and Old Carmel River Dams, and seasonal releases from San Clemente and Los Padres Dams to support all *O. mykiss* life-history phases, including adult and juvenile migration, spawning, and incubation and rearing habitats.

- Identify, protect, and where necessary, restore estuarine and freshwater spawning and rearing habitats (including supplemental water to the estuary, management of sandbar breeching at the river's mouth, and the provision of spawning gravel and large woody debris within the lower mainstem).

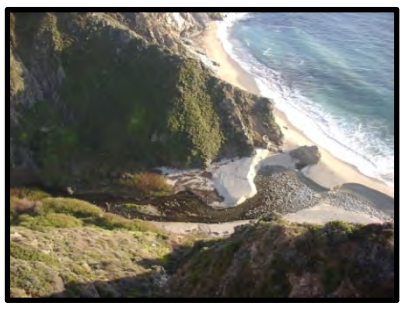
Big Sur Coast
Biogeographic Population Group



The Big Sur Coast BPG includes seven small watersheds that drain the steep coastal slopes of the northern Santa Lucia Range. This region extends approximately 60 miles along a sparsely populated section of coastal Monterey County from the Monterey Peninsula southward almost to the San Luis Obispo County line. From north to south, these watersheds are San Jose Creek, Garrapata Creek, Bixby Creek, Little Sur River, Big Sur River, Willow Creek, and Salmon Creek. The watersheds in the Big Sur Coast BPG are, with one or two exceptions, small, steep, and have small total stream lengths. Although average annual precipitation shows little spatial variation, total seasonal rainfall in this region is highly variable from year to year, depending on the intensity and duration of Pacific storms. In general, the higher elevations receive greater amounts of precipitation, and persistent spring and summer fog is characteristic of this region. All of the watercourses in this BPG are perennial.

Little Sur River Estuary

Big Sur River



Bixby Creek

Threat Source Rankings: Big Sur Coast BPG Component Watershed (north to south)							
THREAT SOURCES	San Jose Creek	Garrapata Creek	Bixby Creek	Little Sur River*	Big Sur River	Willow Creek	Salmon Creek
Culverts and Road Crossings (Other Passage Barriers)							
Roads							
Non-Point Pollution							
Groundwater Extraction							
Recreational Facilities							
Wildfires*							
Dams and Surface Water Diversions							
Non-Native Species							

Key: Red = Very High threat; Yellow = High threat; Light green = Medium threat; Dark green = Low threat
(Threat cell colors represent threat rating from CAP Workbook) *Wildfires were not identified during the CAP Workbook analyses as one of the top five threats in several of these watersheds, but fires in coastal watersheds could result in significant habitats impacts.

Critical Recovery Actions

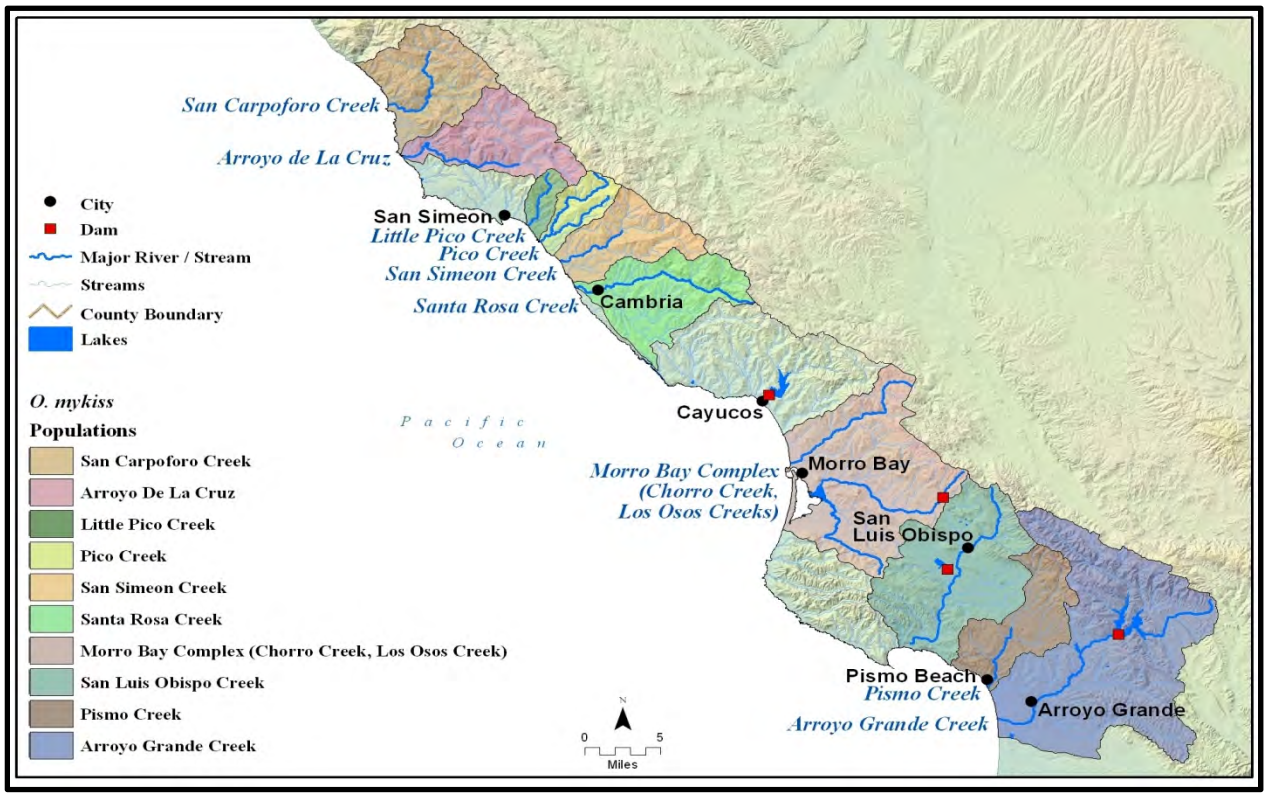
- Implement operating criteria to ensure the pattern and magnitude of groundwater extractions and water releases, including bypass flows around diversions in San Jose, Creek, Little Sur River, and Big Sur River provide the essential habitat functions to support the life history and habitat requirements of adult and juvenile steelhead, including migration to spawning, incubation, and rearing areas.

- Remove or modify instream fish passage barriers, including culverts and road crossings, to allow steelhead natural rates of migration to upstream spawning and rearing habitats, and passage of smolts and kelts downstream to the estuary and ocean, and reduce intrusion into the riparian corridor.

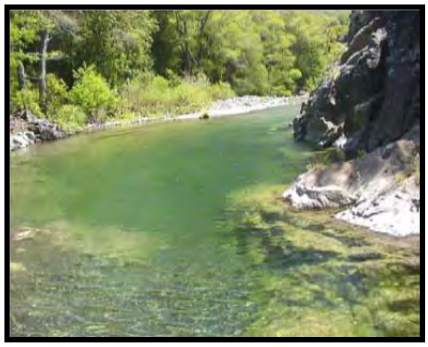
- Manage roads to minimize sedimentation of spawning and rearing habitats.

- Identify, protect, and where necessary, restore estuarine and freshwater rearing habitats.

San Luis Obispo Terrace
Biogeographic Population Group



The San Luis Obispo Terrace BPG region extends north-to-south approximately 75 miles to include the extreme southwest corner of Monterey County and almost the entire length of coastal San Luis Obispo County. From north to south, 12 watersheds are included in this BPG: San Carpoforo Creek, Arroyo de la Cruz, Little Pico Creek, Big Pico Creek, San Simeon Creek, Santa Rosa Creek, Morro Creek, Chorro Creek (Morro Bay), Los Osos Creek (Morro Bay), San Luis Obispo Creek, Pismo Creek, and Arroyo Grande Creek. Watersheds in the San Luis Obispo BPG vary in size by over an order of magnitude, from less than 5,300 acres in the Little Pico Creek watershed to almost 100,000 acres in the Arroyo Grande Creek watershed.



San Carpoforo Creek

Pismo Creek Estuary

Lopez Dam, Arroyo Grande Creek

THREAT SOURCES	**Threat Source Rankings: San Luis Obispo BPG Component Watersheds** (north to south)											
	San Carpoforo Creek*	Arroyo de la Cruz*	Little Pico Creek*	Pico Creek	San Simeon Creek	Santa Rosa Creek	Morro Creek	Chorro Creek	Los Osos Creek	San Luis Obispo Creek	Pismo Creek	Arroyo Grande Creek
Agricultural Development												
Groundwater Extraction												
Dams and Surface Water Diversions												
Levees and Channelization												
Other Passage Barriers												
Urban Development												
Roads												
Recreational Facilities												
Urban Effluents												
Agricultural Effluents												

Key: Red = Very High threat; Yellow = High threat; Light green = Medium threat; Dark green = Low threat
(Threat cell colors represent threat rating from CAP Workbook)

Critical Recovery Actions

- Implement operating criteria to ensure the pattern and magnitude of groundwater extractions and water releases, including bypass flows around diversions in San Simeon, Santa Rosa, San Luis Obispo, Pismo, and Arroyo Grande Creeks provide the essential habitat functions to support the life history and habitat requirements of adult and juvenile steelhead.

- Remove or modify instream fish passage barriers to allow steelhead natural rates of migration to upstream spawning and rearing habitats, and passage of smolts and kelts downstream to the estuary and ocean.

- Minimize erosion and sedimentation caused by upslope development and land uses (including roads, overgrazing, and agricultural and urban development).

- Restore channel morphology and riparian habitats affected by urban and agricultural floodplain encroachment and related flood control activities.

- Identify, protect, and where necessary, restore estuarine and freshwater rearing habitats

Summary

An array of natural and anthropogenic conditions has reduced both the population size and historical distribution of steelhead within the SCCCS Recovery Planning Area, placing severe pressure on the species' ability to survive. However, steelhead are resilient fish and despite encroaching urbanization, they continue to persist in small numbers throughout the SCCCS Recovery Planning Area. The South-Central California Steelhead Recovery Plan outlines a strategy for species' recovery by identifying core watersheds, threats to these watersheds and ways to address those threats.

Many of the recovery actions identified in this Recovery Plan also address watershed-wide processes (*e.g.*, wild-fire cycle, erosion and sedimentation, runoff and waste discharges) which will benefit a wide variety of other native species (including other state and federally listed species, or species of special concern) by restoring natural ecosystem functions.

Restoration of steelhead habitats in coastal watersheds will also provide substantial benefits for human communities. These include, but are not limited to, improving and protecting the water quality of important surface and groundwater supplies, reducing damages from periodic flooding resulting from floodplain development, and controlling invasive exotic animal and plant species which can threaten water supplies and increase flooding risks.

Recovering and delisting the South-Central California Coast Steelhead DPS will reduce the regulatory obligations imposed by the ESA, and allow land and water managers greater flexibility to optimize their activities, and reduce costs related to ESA protections.

Recovery of viable, self-sustaining populations of south-central California steelhead will require a shift in societal attitudes towards the natural environment in order to re-integrate these populations into a highly altered landscape, which is home to more than 2 million people, in ways that support both south-central California steelhead and the human population.

Recovery of south-central California steelhead depends most fundamentally on a shared vision of the future. A shared vision for the future can align interests and encourage cooperation that, in turn, has the potential to improve rather than undermine the adaptive capacity of public resources such as functioning watersheds and river systems.

The on-going cooperation and dedication of many stakeholders from both public and private sectors will be critical to achieve the recovery of south-central California steelhead.

Full Recovery Plan May Be Obtained From:

National Marine Fisheries Service
West Coast Region
501 W. Ocean Blvd., Suite 4200
Long Beach, CA 90802
562-980-4000

Or can be downloaded from the NMFS Recovery Planning website:

www.westcoast.fisheries.noaa.gov/protected_species/salmon_steelhead/recovery_planning_and_implementation/salmon_recovery_planning.html